

Math 131 - Quiz 6

October 2, 2025

Name _____

Score _____

Show all work to receive credit. Supply explanations where necessary.

1. (2 points) Let $h(x) = \frac{f(x) + g(x)}{x}$. Given the following information, compute $h'(2)$.

$$f'(0) = 7, \quad f(2) = -4, \quad f'(2) = 8, \quad g(0) = 0, \quad g(2) = -5, \quad g'(2) = 9$$

2. (3 points) Find $\frac{d^2y}{dx^2}$ when $y = 6x^3 - 4x^2 + \cos x$.

3. (5 points) An object is launched vertically upward from over the edge of a building. The object's height (in meters) after t seconds is given by

$$s(t) = -4.9t^2 + 14.7t + 49.$$

Include units with your answer for each part of this problem.

- (a) Determine the average rate of change the object's height over the interval from $t = 0$ to $t = 3$.

- (b) Determine the object's velocity at time $t = 4$.

- (c) Determine the object's maximum height.